

Examples of mechanical and structural application

GRADES AND PHYSICAL PROPERTIES

Test method				ARLEN						Remarks					
				A series (For mechanical and structural parts)			AE series (For tribologic applications)								
							non-reinforced	non-reinforced, flameretardant							
Physical properties				Unit	ASTM	A315	A335	A350	AE4200	AE4200N	AE2230	PA66	PA MXD6	PPS	
Glass fiber content				%	—	15	35	50	0	0	30	30	40	40	
Specific gravity				—	D792	1.30	1.48	1.63	1.10	1.40	1.37	1.37	1.53	1.67	
Mechanical properties															
Tensile strength				dry	MPa	D638	120	240	300	80*3	70*3	200	180	220	170
				(moist)*1			(110)	(220)	(270)	(70)*3	(60)*3	(180)	(130)	(150)	(—)
Tensile elongation				dry	%	D638*2	3	3	3	50*3	4*3	4	4	2	2
				(moist)*1			(3)	(3)	(3)	(50)*3	(4)*3	(4)	(4)	(2)	(—)
Flexural strength				dry	MPa	D790	190	360	430	110	120	270	260	310	250
				(moist)*1			(170)	(320)	(390)	(100)	(110)	(240)	(180)	(210)	(—)
Flexural modulus				dry	MPa	D790	6,000	12,000	17,000	2,400	3,000	9,000	8,800	13,000	13,000
				(moist)*1			(5500)	(11,000)	(15,000)	(2,200)	(2,700)	(8,000)	(6,000)	(11,000)	(—)
Izod impact				dry	J/m	D256	50	130	150	200	70	100	130	80	80
(notched)				(moist)*1			(70)	(150)	(160)	(220)	(80)	(110)	(150)	(80)	(—)
Rockwell hardness					M scale	D785	105	110	110	65 (R110)	80	95	95	95	100
Thermal properties															
Melting point				°C	—		330	330	330	330	330	330	260	240	280
Glass transition point				°C	—		125	125	125	125	125	125	50	80	90
Deflection temp. under load (1.82MPa)				°C	D648		290	310	310	135	145	300	255	230	265
Coefficient of linear thermal expansion				Flow direction	× 10 ⁻⁵ /°C	D696	3.4	2.0	1.8	8.0	6.5	2.6	2.2	2.0	2.0
				Vertical direction			5.5	4.5	4.2	8.2	6.7	6.0	9.0	4.5	4.0
Electrical properties															
Volume resistivity				(dry)	Ω · cm	D257	10 ¹⁶	10 ¹⁶	10 ¹⁶	10 ¹⁶	10 ¹⁵	10 ¹⁶	10 ¹⁵	10 ¹⁶	10 ¹⁶
Dielectric constant (10 ⁶ Hz)				(dry)	—	D150	4.2	4.5	4.5	3.3	3.3	3.7	3.3	4.0	3.8
Dielectric dissipation factor (10 ⁶ Hz)				(dry)	—	D150	0.020	0.018	0.018	0.018	0.014	0.018	0.015	0.009	0.0014
Dielectric breakdown voltage				(dry)	kV/mm	D149	25	27	29	23	31	27	23	31	17
Other properties															
Mold shrinkage (2mmt)				Flow direction	%	D955	0.5	0.3	0.2	0.9	0.8	0.4	0.4	0.2	0.2
				Vertical direction			0.6	0.6	0.6	0.9	1.0	0.7	0.8	0.6	0.4
Water absorption (24 hr in water) (2 mmt)				23°C	%	D570	0.4	0.3	0.2	0.4	0.3	0.2	0.8	0.2	0.02
				100°C			2.5	1.8	1.2	2.6	2.0	1.7	4.5	3.2	0.3
Flammability				—	UL94		HB	HB	HBequiv.	HB	V-0	HBequiv.	HB	HB	V-0

Notes:
 ★ The above figures are just representative values but not specification values.
 *1 Moist: In a saturated state in the atmosphere at 23°C and a relative humidity of 65%
 *2 Elongation was measured between the chucks.
 *3 Test specimens of the non-reinforced grades were 2 mmt.

Unit conversion:
 Tensile strength, flexural strength,
 flexural modulus,
 1 MPa = 10.2 kg/cm²

Izod impact strength.
 1 J/m = 0.102 kg-cm/cm